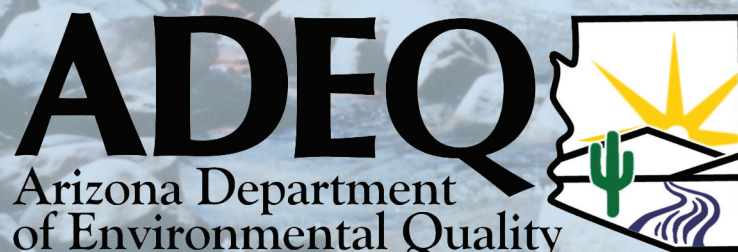
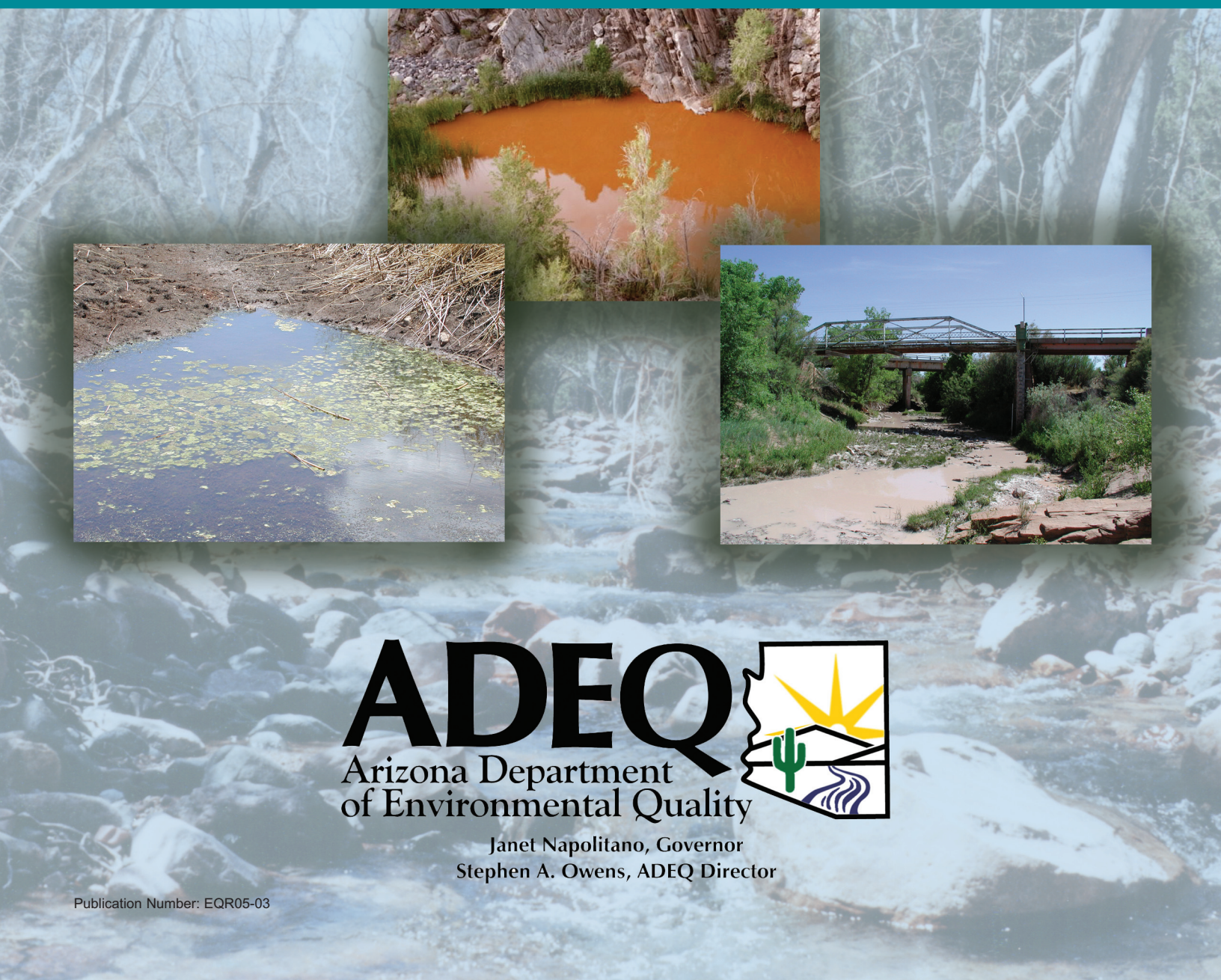


TMDL STATUS REPORT

[Required under A.R.S. §49-236]

September 1, 2005



Arizona Department
of Environmental Quality

Janet Napolitano, Governor
Stephen A. Owens, ADEQ Director

TMDL REPORT

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Background

In 1972, the Clean Water Act (CWA) was established to restore and maintain the chemical, physical, and biological integrity of the nation's waters to provide for the protection and propagation of fish and wildlife; for recreation in and on the nation's waterways; and for the development and implementation of programs to control nonpoint sources of pollution. This is commonly referred to as the "fishable, swimmable" goals of the CWA.

Section 305(b) of the CWA requires states to prepare and submit to EPA a biennial report that describes the water quality of all surface waters in the state. Arizona must monitor water quality and review available data and information from various sources to determine if our water quality standards are being met. A list, known as the 303(d) List, is created that identifies those streams or lakes that do not meet one or more of Arizona's surface water quality standards. These waters are known as "impaired waters." Both the water quality inventory and the impaired waters list are compiled into an Integrated Report. Arizona's 2004 Integrated Report is available on the Department's website at: <http://www.azdeq.gov/enviro/water/assessment/assess.html>.

On July 18, 2001, A.R.S. Title 49, Chapter 2, Article 2.1 became effective and established the process by which the department implements the total maximum daily load or TMDL program. Federal law and state statute require ADEQ to develop TMDLs for impaired waters in Arizona. The statute addresses how the department identifies impaired waters, develops TMDLs, and prepares implementation plans to achieve the needed reductions and to meet applicable standards. Key provisions include:

- considering only reasonably current, credible, and scientifically defensible data in determining whether a stream or lake is impaired;
- adopting rules to describe the methodology used to identify impaired waters including:
 - criteria for ensuring data is current, credible and scientifically defensible,
 - minimum data requirements,
 - implementation procedures for determining impairment based on use of a narrative or biological criterion,
 - statistical or modeling methodologies for identifying impairment, and
 - criteria for removing a water from the list;
- developing prioritization factors and a ranking system for each new 303(d) list;
- establishing implementation plans for each TMDL that explain
 - how the allocations and reductions in existing pollutant loadings are achieved and
 - the timeframes for compliance with the surface water quality standards.

ADEQ adopted the Impaired Water Identification Rule (A.A.C. R18-11-601 et seq) on July 12, 2002 in response to these statutory requirements.

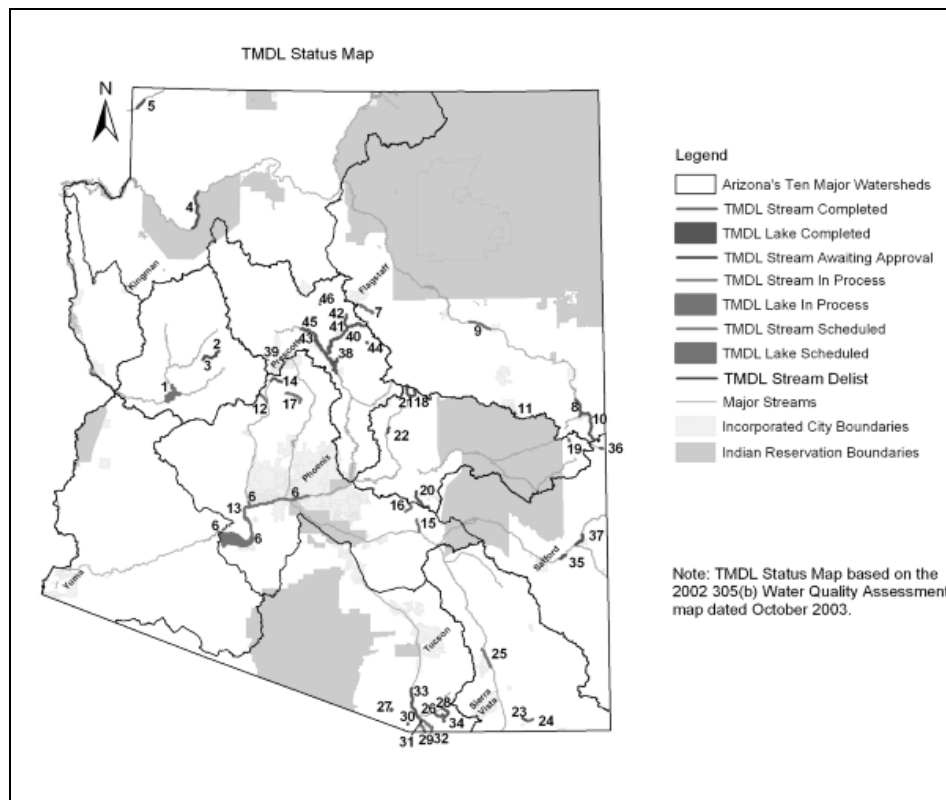
TMDL Program

Overview of the TMDL Program

Arizona must develop TMDL analyses for each surface water identified as “impaired” on its 303(d) List. Both federal regulations and state law require ADEQ to prioritize or rank the 303(d) List of impaired waters for development of a TMDL for each pollutant so that environmental benefits are maximized to deal with the most serious water quality problems and the most valuable resources first. Some of the factors used in ranking impaired waters include: severity of pollution; risk to human health and aquatic life; recreational, economic, and aesthetic importance of the waterbody; and programmatic issues such as the need to issue a permit to a new discharger. Figure 1 shows the status of TMDL development in Arizona.

TMDLs are initiated for surface waters identified as “high priority” within the first two years following 303(d) List approval by EPA. All other waters ranked medium or low priority are scheduled for TMDL development within the next two 5-year watershed cycles. The fact that Arizona is in the tenth year of a drought poses a significant obstacle to the completion of scheduled TMDLs. Some impaired waters may flow only during heavy precipitation events or have water quality problems which only appear during heavy storms.

Figure 1: Status of TMDLs in Arizona



What is a TMDL?

A TMDL is a written, quantitative plan and analysis to determine, on a pollutant specific basis, the maximum amount or “load” of a pollutant that a surface water can assimilate and still attain and maintain water quality standards during all conditions. The TMDL allocates the loading capacity of the surface water to point sources and nonpoint sources identified in the watershed, accounting for natural background and seasonal variation.

Through the TMDL, both load and wasteload capacities of each pollutant of concern are developed. The final TMDL includes point source (wasteload) allocations, nonpoint source (load) allocations, and the load reductions necessary for attainment of Arizona’s water quality standards based on the critical conditions for loading. The TMDL process includes reviewing available records, interviewing stakeholders in the area, field reconnaissance, field measurements, extensive water quality monitoring, and modeling to understand the location, magnitude, and conditions causing the impairment. This process ultimately leads to an understanding of what needs to be done to reduce and prevent the impairment, and an estimate of how long it will take the surface water to attain Arizona’s water quality standards.

The TMDL Program

The TMDL program is one step in a five-part watershed cycle (Figure 2) that incorporates nearly all of the Water Quality Division’s programs in ensuring that Arizona’s surface waters are meeting water quality standards and are safe for uses including fishing, swimming, and drinking. The TMDL program is both a planning and a diagnostic program. It is also the catalyst for the actual water quality improvement program and can affect other programs such as water quality standards, monitoring, assessment and listing. In practice, each of the pieces affects the others so effectiveness can be measured in a number of different ways.

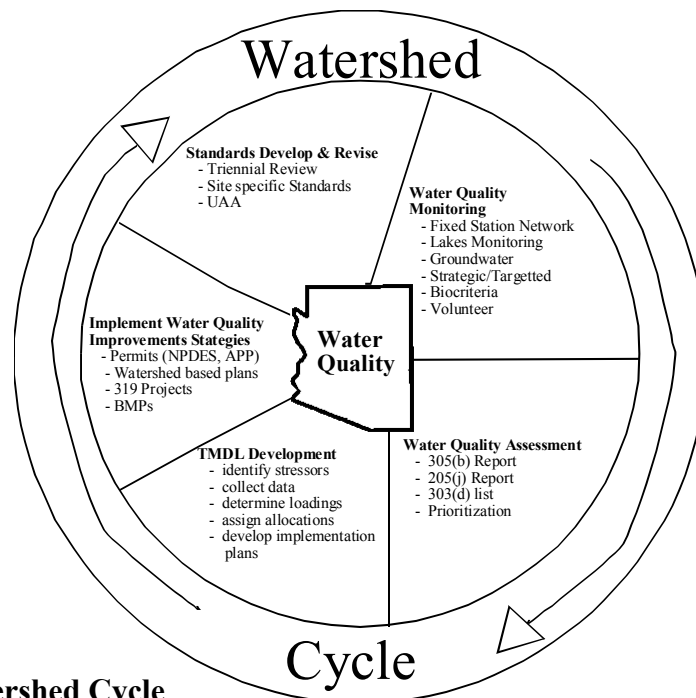
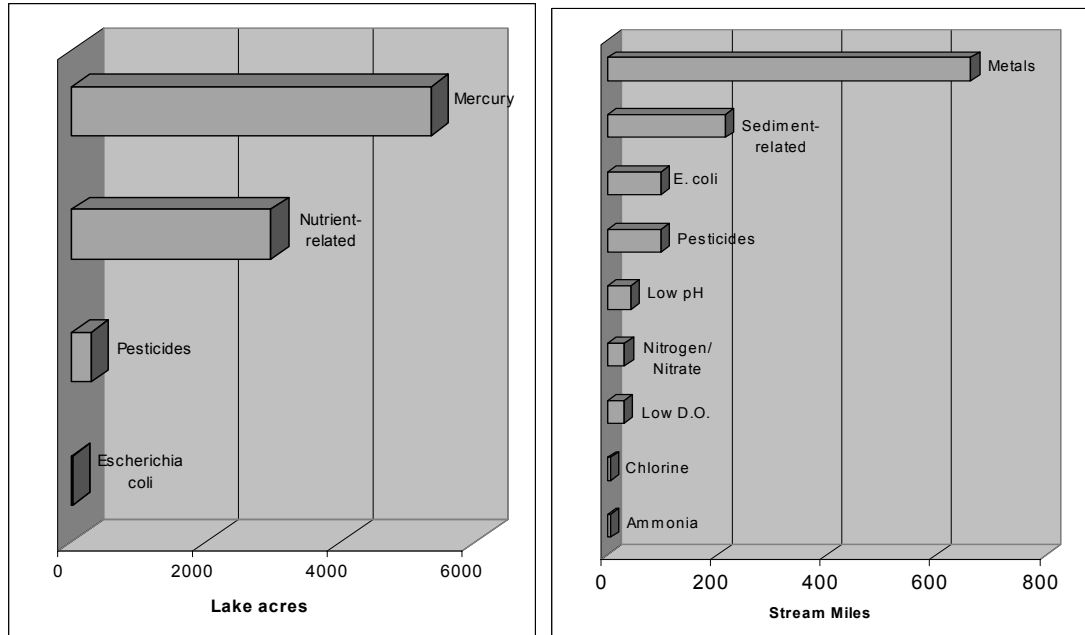


Figure 2: Watershed Cycle

ADEQ develops and adopts surface water quality standards for streams and lakes throughout the state. ADEQ, along with other state, federal and local agencies, conducts water quality monitoring for a variety of purposes. This data is used in the biennial assessment of surface water quality. If a stream or lake is found to be “impaired,” it is placed on the 303(d) List for further investigation under the TMDL Program. Figures 3 and 4 show the pollutants that are impairing the majority of lakes and streams in Arizona.

Figure 3: Pollutants impairing lakes **Figure 4: Pollutants impairing streams**



After prioritizing which surface waters will be addressed first, one of the initial steps in the TMDL process, is reviewing the existing data and collecting additional data to confirm the original listing and to try and identify probable sources of the pollutant(s). On a rare occasion, the newer data will indicate that the surface water was listed in error. In other cases, the data will show that activities in the watershed have improved water quality and the stream or lake is no longer impaired. These surface waters can be removed from the 303(d) List or “delisted.”

In some projects, ADEQ has found that natural background levels for a particular pollutant exceed surface water quality standards. In these instances, a sampling strategy is developed to discern what true “natural” background concentrations are versus what levels of pollutants are present due to man-induced activities (e.g., mining, agriculture, construction). In some parts of the state such as highly mineralized areas, it is unlikely that the surface water ever met the current standard and therefore, it is not reasonable to develop the TMDL for an unattainable value. A site-specific standard, based on natural background or certain regional characteristics, is developed for that area and adopted into the surface water quality standards. The TMDL process then proceeds with the new site-specific standard as the ultimate water quality target.

Pollutant reductions from point sources are achieved through permitting programs. However, there are no regulatory programs for nonpoint source pollution, so load reductions from these sources are strictly voluntary. In Arizona, over 95% of surface

water impairments are the result of nonpoint source pollution. Nonpoint source pollution comes from a variety of activities including excessive sediment caused by the denudation of grasslands from grazing or development, construction, bacteria due to wildlife or recreation, metals from some aspects of historic and/or current mining, and pesticides from both historic and current agricultural activities.

How does the surface water get cleaned up?

After the load and wasteload allocations are established in the TMDL, corrective actions or changes in practices must be implemented in the watershed so that these allocations will be met in the future. TMDL implementation plans provide a strategy that explains how the allocations in the TMDL and any reductions in existing pollutant loadings can be achieved and the timeframe in which compliance with applicable surface water quality standards is expected to be achieved. These plans may include a phased process with interim targets for load reductions. TMDL implementation plans include:

- A description of the Best Management Practices, or other management measures, and associated costs that must be implemented to achieve the load reductions estimated in the plan.
- An action plan for implementing the management measures identified in the plan including a schedule of interim, measurable milestones for determining whether the measures or control actions are being implemented effectively.
- A description of methods that will be used to evaluate effectiveness of the projects in achieving the plan goals.
- An information/education component that will be used to enhance public understanding of the project and encourage their early and continued participation in selection, designing, and implementing BMPs.
- An estimate of the amounts of technical and financial assistance needed, associated costs, and/or sources and authorities that will be relied upon, to implement the plan.

The department actively involves and educates the stakeholders affected by the TMDL process. The goal is to involve these stakeholders while the TMDL is being developed so that they are aware of the problems up front and can realize their role in helping to identify remedies to restore water quality. For most impaired streams or lakes, achievement of water quality standards will occur through voluntary efforts such as watershed groups conducting volunteer monitoring, stakeholders pursuing funding for cleanup measures, and through public education.

Where feasible, development of these plans is a stakeholder-led effort and focuses on encouraging volunteer groups to take the lead in implementing water quality improvement projects through the use of ADEQs Water Quality Improvement Grant Program (WQIP) (federal CWA 319 money) or other funding sources. A grant application for a project on a stream or lake with a completed TMDL implementation plan will receive a higher priority for funding under WQIP. A completed TMDL

implementation plan will have included the necessary stakeholder participation and contain the necessary elements to ensure projects will be successful in actually restoring water quality.

Since 2000, the WQIP has awarded nearly \$3.8 million in federal grant money to various agencies and private landowners to assist in cleaning up Arizona's surface waters. A list of WQIP funded projects on impaired streams and lakes is provided in Appendix A.

DISCUSSION REQUIRED BY A.R.S. § 49-236

A. Evaluate the effectiveness of the TMDL program

ADEQ has developed the following measures of program success:

- Number of stream and lakes listed as impaired
- Number of TMDLs approved
- Number of surface waters delisted
- Number of site specific standards developed
- Number of TMDL implementation plans in process or completed
- Number of/dollars in on-the-ground projects implemented in impaired watersheds
- Number of projects undergoing effectiveness monitoring
- Number of AZPDES permits issued on impaired waters

Number of New Listings

Identifying those streams and lakes that are not meeting surface water quality standards and/or its designated uses is a key step in the overall water quality improvement process. As the impaired waters identification rule was adopted in July, 2002 and the 2002 Report was due to EPA in October of that year, it was not fully implemented until the 2004 assessment. The ability to utilize most of the provisions of the rule in the 2004 assessment resulted in an increase in the number of streams and lakes determined to not be meeting either surface water quality standards or designated uses (see Table 1). For both assessments, EPA partially approved ADEQ's List and partially disapproved the decision not to add additional waters which EPA listed based on its own guidance and policies.

Table 1: Number of New Streams/Lakes Listed as Impaired in 2002 and 2004

Year	No. of pollutants	Stream Miles	Lake Acres
2002 (ADEQ)	11	108	0
2002 (EPA listed)	5	0	1704
2004 (ADEQ)	40	349	1906
2004 (EPA listed)	25	90	2362

TMDLs completed

While the TMDL program under Section 303(d) has been in the CWA since 1972, Arizona, like many states only began concerted efforts towards developing TMDLs in the late 1990s. Since 1999, ADEQ has completed 59 TMDLs (waterbody-pollutant combinations) for impaired streams and lakes throughout the State. Table 2 presents the number of approved TMDLs (per pollutant) and the number of stream miles or lake acres affected since 1999. Extended drought conditions have hampered sample collection efforts on several projects in the past several years. A complete history of the TMDL program, status of completed and ongoing projects and links to approved documents is available at <http://www.azdeq.gov/environ/water/assessment/status.html>

Table 2: Approved TMDLs

Year	Approved TMDLs # of pollutants	Streams # poll/ stream miles	Lakes # poll/ lake acres
1999	8	6 / 188	2 / 169
2000	12	2 / 31	10 / 356
2001	2	2 / 37	0 / 0
2002	11	8 / 91	3 / 95
2003	10	10 / 53	0 / 0
2004	5	5 / 17	0 / 0
2005	11	7 / 64	4 / 15
Totals	59	40 / 481 miles	19 / 635 acres

TMDLs are currently underway on an additional 160 miles of streams in 8 separate projects and 6 lake systems totaling nearly 3600 lake acres. The primary pollutants of concern in these ongoing projects are metals in streams and mercury in lakes. Appendix B contains a list of completed TMDLs since 1999. Appendix B also includes a brief description of any implementation measures, both regulatory and voluntary, that have been undertaken since the TMDL was completed, to restore water quality.

Delistings

In developing a TMDL, ADEQ reviews all readily available data and records, performs field reconnaissance, and conducts extensive surface water monitoring of the impaired surface water and its tributaries. If the data record indicates that the stream or lake is meeting all applicable standards, a “delist” report can be prepared which outlines the reasons why a TMDL is not necessary. Acceptable findings to delist a surface water include:

- Newer data shows that the surface water meets all applicable surface water quality standards, especially during the critical conditions of concern;
- There has been a change in assessment procedures or an EPA approved change in the applicable surface water quality standard or designated use such that the surface water is now meeting standards;
- A deficiency has been discovered in the original analysis of impairment;
- Pollutant loadings from naturally occurring conditions alone are sufficient to cause a violation of standards and there are no anthropogenic contributions to the impaired segment; or
- Water quality improvements have occurred in the watershed, either through regulatory or voluntary actions, that have resulted in the stream or lake now meeting surface water quality standards and/or its designated uses.

Since 1999, ADEQ has delisted 85 streams, totaling 1208 miles and 11 lakes, totaling 5946 acres. The reasons for delisting are shown in Table 3 below. Note: a surface water may be impaired for more than one pollutant at the same time.

Table 3: Summary of Actions Resulting in Delisting of a Surface Water (2002-2004)

Reason for Delist	No. of Streams	Stream Miles	No. of Lakes	Lake Acres
Recent data shows no impairment	14	269	3	1780
TMDL investigation	14	168	3	40
Change in assessment criteria, applicable standards or designated use	50	672	2	1594
Deficiency in original analysis	1	29	0	0
Naturally occurring conditions causing impairment	2	48	2	2382
Water quality improvements in watershed	4	51	1	150
Totals	85	1208	11	5946

Water Quality Standards Development

Several TMDL projects have required development of a site specific standard for the pollutant of concern. In these cases, ADEQ found, after a thorough investigation, that “natural background” concentrations of a particular pollutant was higher than the applicable surface water quality standard which suggests that the area never met the applicable surface water quality standard. Staff then conducted intensive sampling to determine what true “natural” background concentrations are versus what levels of pollutants are present due to man-induced activities (e.g., mining, agriculture, construction). The data is used to develop a site-specific standard that will be adopted into the surface water standards for that waterbody and the TMDL process will use the new site-specific standard as the water quality target for the study. Site specific standards are currently being developed for two impaired waters: Pinto Creek (copper) and Mule Gulch (copper).

Another area where the TMDL program has influenced the water quality standards program is where it becomes clear that the existing standards, as developed or as

expressed, are not appropriate for a particular class of stream or lake. Nutrient criteria in lakes is an example where numerous lakes were being listed as “impaired” based on low dissolved oxygen and high pH values coupled with extensive algal growth that often leads to fish kills. Each of these impaired lakes would require a TMDL for each of the criteria not being met. After investigating several of the lakes, ADEQ determined most were going to require site specific standards if they were to achieve certain numeric criteria.

Rather than trying to make one set of numeric criteria apply to all lakes in the state or develop site specific criteria for each of the lakes, ADEQ has researched and classified nearly 100 lakes into categories based on similar characteristics (e.g., elevation, climate, size, geology) and uses (e.g., fishing, swimming, drinking water source) and is developing ranges of values, like a scorecard, for the parameters of concern. Once the lake classification endpoints are adopted into the surface water standards and ADEQ develops procedures for implementing these new nutrient standards, if ambient lake monitoring results fall within the specified ranges for the type or “class” of lake, it will be considered in full attainment of its standards and uses. Conversely, if the water quality data indicates the lake falls outside the range of acceptable values, the lake will be classified as impaired and a TMDL study will be conducted.

TMDL Implementation Plans

TMDL implementation plans are water quality based watershed plans that provide the details needed to be developed to support the achievement of the necessary load and wasteload reductions. The wasteload reductions are implemented and monitored through the point source discharge permit program (discussed below). The plan also addresses load reductions and should identify the Best Management Practices (BMPs) that should be installed to achieve water quality improvements for nonpoint source issues. The plan also discusses monitoring efforts, implementation schedules, costs, responsibilities and education/outreach activities.

In order to ensure the necessary nonpoint source load reductions are achieved, an adaptive management approach can be used. The best measure of the watershed management effort’s performance is a well-designed and implemented monitoring effort that examines statistically the relationship between the project activities and the changes in water quality. Since there is a lag between when BMPs are installed and when actual water quality improvements can be expected, evaluation of NPS implementation needs to be more than just water quality monitoring – it is an evaluation framework that organizes the monitoring and assessment effort to collect, analyze and utilize data not only to document what has been accomplished but to improve ongoing implementation.

To date, ADEQ’s Watershed Management Group has developed TMDL implementation plans for 10 TMDL projects and 5 more are in process

Implementation projects

Implementation projects are funded by a variety of sources – federal, state, and private. As noted above, since 2000, ADEQ has awarded nearly \$3.8 million dollars in federal grant money through the Water Quality Improvement Grant Program (WQIP) to fund

projects aimed at restoring water quality in impaired waters. The WQIP, is a statewide grant program aimed at funding water quality improvement projects to address waters impaired by nonpoint sources of pollution. Special priority is given to projects on impaired waters for pollutants of concern identified in a TMDL study. Local, state, federal, nonprofit, private and tribal entities are eligible to apply. As these funds are earmarked for nonpoint sources of pollution, these are voluntary actions on the part of stakeholders as there is no nonpoint source regulatory program in Arizona. A list of awarded projects on impaired waters is provided in Appendix A.

ADEQ's grant program is a successful example of building working partnerships with stakeholders in controlling nonpoint source pollution. ADEQ encourages applicants to work with financial programs from federal and other state agencies to ensure that the WQIP funds complement and leverage other funds available for technical and financial assistance. This is especially important when trying to develop the 40% non-federal match requirement of Clean Water Act Section 319 grants, the funding source for the WQIP. Appendix C provides a list of some of the non-WQIP funded implementation projects that have been carried out on impaired streams and lakes in Arizona by federal agencies or private parties.

Effectiveness monitoring

TMDL effectiveness monitoring is a fundamental component of any TMDL implementation plan. It measures to what extent the waterbody has improved and whether it has been brought into compliance with the Arizona surface water quality standards. The benefits of TMDL effectiveness evaluation and monitoring include:

- a measure of progress towards implementation of recommendations (e.g., how much watershed restoration has been achieved, how much more effort is required)
- more efficient allocation of funding and optimization in planning and decision-making (e.g., identifying the BMPs that worked, which restoration activity achieved the most success from the dollars spent)
- technical feedback to refine the initial TMDL model, BMPs, nonpoint source plans and permits (e.g., have the BMPs worked in reducing the impairment, was the reduction in the TMDL sufficient to achieve standards)

ADEQ is currently performing effectiveness monitoring on seven TMDL projects where implementation strategies have been enacted. In addition, many of the WQIP projects include effectiveness monitoring to determine which implementation strategies provide the best improvements in water quality. Appendix B provides a summary of completed TMDL studies, projects where implementation measures have been put into practice and where effectiveness monitoring has begun. If the monitoring finds the stream or lake is now meeting water quality standards, the TMDL study, and more importantly the implementation projects, were a success. If the monitoring finds little to no improvement in water quality, the TMDL will be revisited to determine if additional reductions are necessary or if a different type of study may be called for. In some instances, changes to the water quality standards (e.g., site specific standards) may be necessary for a region of the state or for a number of similar waterbodies.

Point Source Discharge Permits

A surface water discharge permit is required for a point source discharge of pollutants to a stream or lake. Both state and federal regulations prohibit the issuance of a new surface water discharge permit to a discharger on an impaired stream or lake if the discharge will contain the pollutant(s) for which the stream is listed. 40 CFR 122.4(i) prohibits a discharge that will “cause or contribute to the violation of water quality standards.” The rationale is that the stream or lake is listed as impaired for exceedances of Arizona’s surface water quality standards. The stream or lake is already unable to assimilate existing loads so the addition of a new or expanded load will only exacerbate the situation.

In these cases, the permit application may be held in abeyance until the TMDL has been completed and approved by EPA. Once the wasteload allocations are determined through the TMDL study, the permit can be written to ensure that the discharge will not add pollutant loadings to the system. This can be achieved in a variety of ways. For example, the discharger may have to treat the effluent to eliminate the pollutant entirely from the waste stream or may seek a pollutant trading agreement with another discharger on the same stream thereby ensuring the wasteload allocation established in the TMDL is not exceeded. Since 1999, six surface water discharge permits have been issued or are being drafted based on wasteload allocations in a TMDL report (see Table 5).

Table 5: Surface Water Discharge Permits Affected by a TMDL Study

Permittee	Impaired Water	Pollutants of Concern
AGFD Tonto Creek Fish Hatchery (being drafted)	Tonto Creek	Nitrogen
Asarco January Adit	Alum Gulch	Cadmium, copper, zinc, pH
Carlota Copper Co.	Pinto Creek	Copper
City of Tucson Lakeside Lake (being drafted)	Lakeside Lake	Ammonia, nutrients, pH, dissolved oxygen
City of Yuma	Colorado River	Nitrogen
Pinewood Sanitary District	Munds Creek/Oak Creek	Nitrogen, phosphorus, E. coli

On August 22, 2005, the Ninth Circuit Court of Appeals vacated ADEQ’s delegated authority to administer the NPDES (known as AZPDES in Arizona) permit program because ADEQ is not required to perform the same level of consultation with the U.S. Fish and Wildlife Service regarding endangered species as the EPA must do. This decision is still in litigation and its effect on the point source discharge permit and TMDL programs are unknown at the time this report was prepared.

B. Identify any recommended statutory changes to make the program more efficient, effective and equitable

The TMDL Program in Arizona has been and will continue to be a valuable tool to identify water quality problems in Arizona’s streams and lakes, determine sources of impairment and establish the pollutant reductions necessary to achieve water quality. The TMDL Program also develops implementation plans to direct the clean up of the

pollution sources to ensure the ability of the public to use the streams and lakes for swimming, fishing and drinking water purposes.

On July 29, 2005, EPA issued its latest 303(d) Listing Guidance that states must use in developing the 2006 Integrated Report of Water Quality. After ADEQ completes its analysis of the new guidance, it will conduct a stakeholder process to consider appropriate rule changes to Arizona's listing methodology. Following this process, ADEQ will be prepared to recommend any needed statutory changes.

C. Assess the extent to which water quality problems, that cannot be effectively addressed under the TMDL program, may be addressed under other federal or state laws

The department finds that the TMDL program is effective in dealing with most water quality problems. Below are two examples of situations where it is not possible for the State to resolve water quality problems with a TMDL.

It is difficult for an individual state to address the transboundary migration of pollutants. Certain pollutants are of concern on a basin-wide scale and cannot be addressed satisfactorily at the single state level. Dealing with these pollutants that cross interstate as well as international boundaries requires a basin-wide effort and, absent a basin commission such as are found in the east on rivers such as the Ohio or the Delaware Rivers, may require assistance from EPA or other federal agencies.

Interstate/International Pollutants

Selenium is a transboundary pollutant that affects Arizona as well as all the other Upper and Lower Colorado Basin states. Since the discovery of wildlife deaths and deformities caused by selenium in irrigation drainwater at Kesterson National Wildlife Refuge in California, the USGS and other federal and state agencies have been investigating the occurrence and movement of selenium.

The USGS prepared a selenium budget for Lake Powell, on the Utah-Arizona border, determining the loads at the principal stream inputs to the lake and the load coming from the lake. It was determined that 83% of the selenium entering Lake Powell is accounted for at the output. The rest of the selenium is either incorporated into lake sediments or used by biota.

Irrigation related activities in the Upper Basin are thought to be responsible for mobilizing 71% of the selenium that reaches Lake Powell. Selenium concentrations in water at Imperial Dam are similar to those at the output site of Lake Powell. Given that there are no major sources of selenium in the lower basin, research shows that the principal source of selenium in Lower Basin sites is the Colorado River Basin above Lake Powell.

A number of streams in both the upper and lower portions of the Colorado River Watershed are listed as impaired for selenium. ADEQ can perform a TMDL study to determine the source of the pollutant and the necessary reductions needed to meet surface water quality standards. But if over 70% of the selenium load is coming from Utah,

Wyoming and Colorado, there is no state regulatory program that can be used to enforce the reductions. A basin-wide TMDL might better address the problem and identify solutions but funding and staffing such a project would likely fall to the federal agencies rather than individual states.

Other streams in Arizona that are affected by transboundary issues include: the Santa Cruz and San Pedro Rivers in southern Arizona that either begin in Mexico or flow through Mexico before returning to the U.S.; the Gila and San Francisco Rivers (New Mexico); the Virgin and Paria Rivers (Utah); Lake Powell (Utah); Lakes Mohave, Havasu, and Mead (Nevada, California and Utah)).

Aerial Deposition of Mercury

Mercury is a pollutant that is receiving national attention due to concerns for human health and the environment. While mercury is a naturally occurring element, studies show that human activities have more than tripled its concentration in the environment. When deposited in an aquatic system, inorganic mercury is transformed into an extremely toxic organic methylmercury, which bioaccumulates up the food chain as humans and animals consume the mercury-tainted organisms such as fish. Over 80% of anthropogenic mercury comes from four primary sources: coal-fired utility boilers, municipal waste combustors, medical waste incinerators and hazardous waste incinerators. Other sources include instruments and products containing mercury such as fluorescent lamps, thermostats and batteries.

Because of the different forms of mercury and their chemical behavior, people are placed at risk from mercury that may have come from local sources, a different state or a different part of the world. For example, recent studies in the northeastern U.S. estimate 47% of the mercury deposited in the northeast comes from within the region, 30% comes from other U.S. sources and 23% from global sources.

In Arizona, there are currently 11 lakes with fish consumption advisories due to high levels of mercury in fish tissue. If it is determined, as the studies in the eastern U.S. suggest, that over 50% of the mercury comes from other states, Mexico or globally, it will be impossible for Arizona to achieve the necessary reductions in order to restore these lakes to fishable conditions. It will take the efforts of many players including EPA, the states and international groups; and many years to reduce mercury in the environment.

D. Identify the number of appeals of department decisions under this article sought pursuant to title 41, chapter 6, article 10 and the disposition of those appeals, and assess the impact of those appeals on the department's ability to administer the program effectively

One Notice of Appeal has been filed pursuant to A.R.S. §§41-1092.03(B) and 49-232(A). On July 28, 2004, Phelps Dodge Corporation and Phelps Dodge Bagdad, Inc., (collectively Phelps Dodge) filed the appeal of "ADEQ's final decision or determination" to list four surface waters (Table 6) in the Bill Williams Watershed on its 2004 303(d) list of impaired waters for chronic mercury impairment. A.R.S. §49-232(A) requires that if a listing is appealed, the Department must remove the appealed listing from the 303(d) List

that is sent to EPA for approval. ADEQ complied with this provision prior to sending the proposed 303(d) List to EPA.

A hearing date was set for September 28, 2004. On September 27, 2004, Phelps Dodge and the Department filed a Joint Stipulated Order whereby ADEQ agreed not to list the four surface waters, identified in the July 26, 2004 Notice of Appeal, on the final 2004 303(d) list of impaired waters for chronic mercury impairment.

Table 6: List of Appealed Streams

Stream	Stream ID	Basis for listing
(1) Boulder Creek: unnamed wash to Wilder Creek	15030202-006B	Exceeded numeric mercury standard set to protect aquatic and wildlife
(2) Boulder Creek: Wilder Creek to Butte Creek	15030202-005A	Exceeded numeric mercury standard set to protect aquatic and wildlife
(3) Burro Creek: Boulder Creek to Black Canyon	15030202-004	Exceeded numeric mercury standard set to protect aquatic and wildlife
(4) Butte Creek: headwaters to Boulder Creek	15030202-163	Exceeded numeric mercury standard set to protect aquatic and wildlife

On November 16, 2004, EPA approved Arizona's proposed §303(d) List of 53 surface waters and associated pollutants and disapproved Arizona's decision not to list 19 additional streams and lakes and additional pollutants on 8 streams and lakes already listed. EPA provided notice of the additional listings and the opportunity for comment in the Federal Register.

On February 24, 2005, ADEQ sent a letter to EPA clarifying that EPA's decision to list any of the appealed streams should not be based on the use of Arizona's law and methodology but rather must be based on federal law, regulations and guidance (copy of letter provided in Appendix D.) On March 15, 2005, ADEQ provided comments on the EPA overfiling regarding the four stream segments identified in Table 6, stating: "[T]he issue has been raised whether some of the data submitted on the segments at issue were in fact representative of conditions in the segments....Because of the issues that have been raised about these and other data....ADEQ believes it would not be appropriate to include these segments on the 303(d) List at this time and we request that EPA refrain from doing so" (copy of letter provided in Appendix D.)

On March 17, 2005, EPA declined to follow ADEQ's request and officially listed and prioritized the additional waters and pollutants to Arizona's 2004 §303(d) list including three of the appealed listings -- Streams 1, 2 & 3 in Table 6.

In the end, EPA is not bound by state rules and can use its discretion to "overfile" on the State's decisions irrespective of the State's wishes. In this case, EPA added three of the four appealed listings based on the same data reviewed and assessed by the State.

Appendix A
Water Quality Improvement Grant Awards
for Impaired Surface Waters

Project #	Contract Title	Awarded	Year
7-001	EC Bar Ranch Turbidity Reduction Project - Phase VII	\$60,000.00	2004
7-002	Campomocho-Sacaton Watershed Stormwater Runoff Control Phase II	\$179,800.00	2004
7-004	The Gibson Mine TMDL Reduction to Pinto Creek	\$570,102.00	2004
6-004	EC Bar Ranch Turbidity Reduction Project - Phase VI	\$182,250.00	2003
6-003	Upper Verde River Wildlife Area Turbidity Reduction Project	\$539,897.00	2003
6-023	Oak Creek Canyon Task Force Water Quality Guardian Program	\$1,126,594.00	2003
5-001	EC Bar Ranch Turbidity Reduction Project - Phase V	\$31,440.00	2002
5-012	M Diamond West Clear Creek Proposal	\$119,100.00	2002
4-014	Coal Creek Riparian Corridor Enhancement	\$63,108.00	2001
4-012	Upper Verde River Collaborative Watershed Restoration Project	\$55,700.00	2001
4-016	Fecal Coliform and Sediment Reduction for Oak Creek In Redrock Country	\$32,488.00	2001
3-003	Best Management Practices: A Balancing Act	\$40,000.00	2001
3-004	Oak Creek Canyon Task Force Water Quality Guardian Program	\$105,454.00	2001
3-005	Campomocho-Sacaton Watershed Stormwater Runoff Control	\$8,036.00	2001
3-006	EC Bar Ranch Turbidity Reduction Project - Phase III	\$45,036.00	2001
3-011	San Pedro Wildlife Sanctuary Habitat Restoration Project	\$126,792.00	2001
3-012	Greenwood Sediment Reduction Project	\$224,500.00	2001
2-005	Alpine / Luna Lake Improvement	\$152,580.00	2000
2-008	EC Bar Ranch Turbidity Reduction - Phase II	\$51,540.00	2000
2-007	Murray Basin/Saffel Canyon - Phase II	\$85,523.00	2000
		\$3,799,940.00	

Appendix B

Completed Total Maximum Daily Load Studies

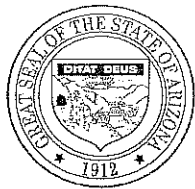
Impaired Water/ Year TMDL Completed	Pollutants of concern	Miles/ Acreage	Status of Implementation Measures & Monitoring
Oak Creek 1999	Nitrogen, phosphorus, fecal coliform, E. coli	51 mi	Grant projects funded
Munds Creek 1999	Nitrogen, phosphorus	17 mi	NPDES permit issued
Nutrios Creek 2000	Turbidity (2 segments)	31 mi	Grant projects funded Effectiveness monitoring ongoing
Pinto Creek 2001	Copper (2 segments)	37 mi	NPDES permit issued; grant project funded
Verde River 2002	Turbidity (3 segments)	42 mi	Grant projects funded Effectiveness monitoring ongoing
Hassayampa River 2002	Cadmium, copper, zinc	11 mi	Remediation of two abandoned mines by USFS/ADEQ Effectiveness monitoring ongoing
Alum Gulch 2003	Cadmium, copper, zinc, pH	2 mi	AZPDES permit issued
Harshaw Creek 2003	Copper, zinc, pH	10 mi	
Three-R Canyon 2003	Cadmium, copper, zinc	5 mi	
Tonto Creek 2005	Nitrogen, E. coli (2 segments)	17 mi	Grant project funded
Christopher Creek 2004	E. coli	8 mi	
Little Colorado River 2002	Turbidity (2 segments)	16 mi	
Boulder Creek 2004	Arsenic (2 segments), copper, zinc	3 mi	Remediation/grant project in development
French Gulch 2005	Cadmium, copper, zinc	10 mi	
Subtotal stream miles		481 miles	
Subtotal TMDL count		22 stream segments for 40 pollutants	
Lakeside Lake 2005	Ammonia, nutrients, pH, dissolved oxygen	15 ac	AZPDES permit being drafted, treatment system installed
Pena Blanca Lake 1999	Mercury	51 ac	Remediation of abandoned millsite by USFS Effectiveness monitoring ongoing
Arivaca Lake 1999	Mercury	118 ac	Effectiveness monitoring ongoing
Rainbow Lake 2000	Nitrogen, phosphorus, pH	111 ac	Weed harvesting Effectiveness monitoring ongoing
Luna Lake 2000	Nitrogen, phosphorus, pH, dissolved oxygen	120 ac	Weed harvesting, grant projects funded Effectiveness monitoring ongoing
Peck's Lake 2002	Nutrients, pH, dissolved oxygen	95 ac	NPDES construction stormwater permit issued
Stoneman Lake 2000	Nutrients, pH, dissolved oxygen	125 ac	Grant projects funded
Subtotal lake acres		635 acres	
Subtotal TMDL count		7 lakes for 19 pollutants	

Appendix C
Non-WQIP Funded Implementation
Projects on Impaired Waters

Project/Impaired Water	Entity	Sources of Pollution
Mule Gulch (ongoing)	Phelps Dodge (private)	Tailings piles, stormwater control
Hassayampa River McClellan Mine (completed) Blue John Mine (in planning stage)	EPA,USFS	Millsite, waste rock, tailings piles Waste rock, tailings
Boulder Creek (in planning stage)	BLM	Upper tailings pile, waste rock
Pena Blanca Lake (completed)	USFS	St. Patrick Mine
Pinal Creek (ongoing)	Private consortium	Numerous mines in Miami-Globe area
Turkey Creek Golden Turkey, Golden Belt & French Lily Mines (in planning stage)	USFS	Waste rock, tailings piles

Appendix D

ADEQ Letters to EPA Regarding Listing of Appeal Surface Waters



Janet Napolitano
Governor

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

1110 West Washington Street • Phoenix, Arizona 85007
(602) 771-2300 • azdeq.gov



Stephen A. Owens
Director

March 14, 2005

Mr. Wayne Nastri
Regional Administrator
U.S. EPA Region IX
75 Hawthorne Street
San Francisco, CA 94105

Dear ^{Wayne} Mr. Nastri:

I am following up on the February 24, 2005 letter from Karen Smith, ADEQ's Water Quality Division Director, to Alexis Strauss, in which we stated ADEQ's understanding, based on discussions with your office, that EPA Region IX will "not use Arizona law and methodology" in making its 303(d) listing decision regarding four segments of Boulder, Burro, and Butte Creeks in the Bill Williams watershed in Arizona. We reiterate our position that any decision by EPA must be based on federal laws, regulations and guidance and not Arizona law and methodology.

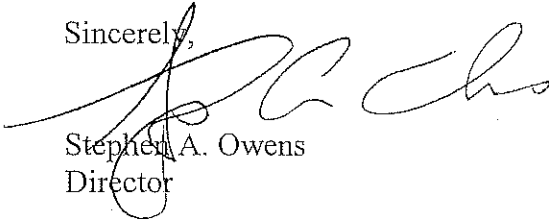
Despite EPA's assurances to us, certain parties in this matter have continued to express their belief that EPA will "defer" to ADEQ's original proposed listing of these four segments as impaired, despite the fact that ADEQ withdrew the proposed listing and did not submit the segments to EPA. These parties claim that they have been told such by EPA personnel in your office.

The issue has been raised whether some of the data submitted on the segments at issue were in fact representative of conditions in the segments. For example, in some of data submitted by Phelps Dodge the dissolved mercury results were higher than the total mercury results, which may indicate quality assurance issues in either sampling or laboratory analysis.

Because of the issues that have been raised about these and other data that have been submitted, ADEQ believes it would not be appropriate to include these segments on the 303(d) list at this time, and we request that EPA refrain from doing so.

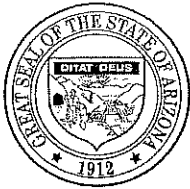
Thank you for your attention to this matter.

Sincerely,


Stephen A. Owens
Director

Northern Regional Office
1515 East Cedar Avenue • Suite F • Flagstaff, AZ 86004
(928) 779-0313

Southern Regional Office
400 West Congress Street • Suite 433 • Tucson, AZ 85701
(520) 628-6733



Janet Napolitano
Governor

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

1110 West Washington Street • Phoenix, Arizona 85007
(602) 771-2300 • azdeq.gov



Stephen A. Owens
Director

February 24, 2005

Ms. Alexis Strauss
Director, Water Division
Environmental Protection Agency Region IX
75 Hawthorne Street
San Francisco, CA 94105

Re: Arizona's 2004 Integrated Report

Dear Ms. Strauss:

On September 2, 2004, the Arizona Department of Environmental Quality (ADEQ) submitted to your office the Arizona Integrated Report for 2004, which contained the State's proposed listing of impaired waters (the "303d list"). Arizona's proposed list initially included listings for segments of Boulder, Burro and Butte Creeks in the Bill Williams watershed, but these proposed listings were appealed under Arizona law at §49-232(A). ADEQ therefore removed these waters from the Arizona list when it forwarded the list to EPA for its approval, as required by the federal Clean Water Act and its implementing regulations.

EPA is currently considering its actions on the Arizona list. EPA has advised ADEQ that EPA will review raw data collected in Arizona from various sources, including data collected by private entities (such as Phelps Dodge Corporation), ADEQ, and others, as well as data that do not meet Arizona's credible data requirements. EPA has assured ADEQ, however, that if EPA chooses to add these appealed waters to the Arizona list of impaired waters, EPA will do so based upon the federal Clean Water Act, its implementing regulations, and federal guidance, and not based upon Arizona law or listing methodology.

Despite EPA's assurances, certain parties in Arizona are asserting that EPA intends to base its listing decision on Arizona law and methodology. Because of these assertions, ADEQ wishes to state formally its position that EPA will not use Arizona law and methodology in this matter. Any decision by EPA must be based on federal laws, regulation, and guidance.

Sincerely,

Karen L. Smith, Director
Water Quality Division

Northern Regional Office
1515 East Cedar Avenue • Suite F • Flagstaff, AZ 86004
(928) 779-0313

Southern Regional Office
400 West Congress Street • Suite 433 • Tucson, AZ 85701
(520) 628-6733